Reducing youth access to tobacco

The tobacco industry has been criticised repeatedly for using a distribution system that illegally sells its products to children.[1 2] The importance of illegal distribution in the propagation of tobacco use among children was recently brought to light. Jason *et al* reported a 69% decline in smoking among adolescents in Woodridge, Illinois, after active law enforcement using underaged buyers and hefty fines decreased illegal sales from 70% to 3% of attempted purchases.[3] Our experience in Leominster, Massachusetts, confirms the important role illegal distribution plays in adolescent smoking and the efficacy of active police enforcement as a preventive measure.

In September 1989 the Leominster Board of Health announced plans to regulate tobacco sales. A baseline survey of tobacco use was conducted over the next two months among a convenience sample of 501 Leominster students in grades 7 to 12 (table). In December 1989 regulations were adopted which provided for active enforcement of the prohibition on the sale of tobacco to minors by compliance testing with underaged buyers. There were 100 tobacco retailers in Leominster: 34 stores and 66 vending machines, of which 43 were located in public places. Enforcement began after a period of merchant education. In November 1990 a 10 year old boy and 13 year old girl were refused in 34 out of 42 attempts (81%) to purchase tobacco. Violators were issued warnings and those in compliance received letters of commendation. In March 1991 two boys of 11 and 12 years old were refused in 16 out of 19 attempts (84%). Repeat offenders were issued $25 fines. In July 1991 two 16 year old girls were refused in 20 out of 58 attempts (35%); repeat offenders were issued $40 fines. During this period 17 vending machines were removed by their owners to avoid liability.

Follow up surveys of high school and junior high school students were performed in June and November 1991, respectively (table). Though the magnitude of the reduction in the prevalence of smoking was less than that seen in Woodridge, it is consistent with the lower compliance rates achieved in Leominster to date.

Leominster's lower compliance rates may be due to less frequent inspections, our use of older inspectors (16 years of age *v* 13), and smaller fines ($40 *v* $400). In Woodridge each vendor was inspected five times in one year. This is probably the ideal intensity of enforcement, but one which we have not yet achieved in Leominster. It is encouraging, however, that the beneficial effect of enforcement on adolescent smoking rates is evident even with moderate improvements in compliance.

It is possible that our convenience sampling of students produced a selection bias, but this criticism would not apply to the Woodridge data. Neither the Woodridge nor Leominster enforcement efforts used a control group so it is possible, although not very plausible, that some factor other than enforcement was responsible for the dramatic drop in smoking prevalence in both communities.

We conclude that the decision of tobacco manufacturers to use a distribution system that illegally sells their products to children is a major factor in determining the prevalence of tobacco use among children and may be responsible for up to two thirds of such use.[3] Curtailing these illegal sales through active law enforcement using underaged buyers can have an enormous impact on the prevalence of smoking. In conjunction with establishing vigorous enforcement efforts, tobacco control advocates should work to force manufacturers to adopt a strictly controlled distribution system of manufacturer licensed or franchised retailers.

Change over time in the percentage of students identifying themselves as cigarette smokers

Age (years)	Survey* Baseline	Survey* Follow up†	Change (%)‡	p value¶
12–13	14·2 (217)	7·9 (316)	−44·4	< 0·05
14–15	20·0 (130)	21·7 (129)	+ 8·5	NS
16–17	43·6 (55)	25·9 (135)	−40·6	< 0·05
18–19	33·7 (98)	22·6 (53)	−32·9	NS

* Figures in parentheses indicate the total population surveyed.
† Follow up surveys in June and November 1991 are combined because of overlap in ages.
‡ Percentage change $= \left(\frac{\text{baseline} - \text{follow up}}{\text{baseline}}\right) \times 100$
¶ By χ^2 test. NS = not significant.

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1 DiFranza JR, Norwood BD, Garner DW, Tye JB. Legislative efforts to protect children from tobacco. *JAMA* 1987; **257**: 3387–9.
2 DiFranza JR, Tye JB. Who profits from tobacco sales to children? *JAMA* 1990; **263**: 2784–7.
3 Jason LA, Ji PY, Anes MD, Birkhead SH. Active enforcement of cigarette control laws in the prevention of cigarette sales to minors. *JAMA* 1991; **266**: 3159–61.

Dr DiFranza publishes a bimonthly newsletter, Tobacco Access Law News, which provides information on recent legislative activity aimed at reducing youth access to tobacco. News items may be submitted, and requests to be added to the mailing list may be sent, to: Dr Joseph DiFranza, 47 Ashby State Road, Fitchburg, Massachusetts 01420, USA. — ED.

Tobacco and kids: using creative epidemiology to move an audience

A high school assembly, Anytown, USA. More than 100 teenagers – a rainbow of races – doze or fidget or flirt in the chilly auditorium. Our job is to break through their resistance to education about the perils of tobacco. Educating youth about tobacco – or, for that matter, any risky behaviour – usually occurs in school settings and remains one of the great challenges of health education. Talking to Rotarians, Lions, religious groups, and city councils is a lot easier.

"Today we're talking about health. Can anybody name a dangerous substance?" "White bread," says a girl near the front as her friends laughed. We say something about tobacco. No one seems to hear it. "What's the big deal about tobacco?" says the same girl, "haven't you heard of crack?" "By the time we're done you're going to see that tobacco is worse than crack." The combined volume and audacity of this statement swivels heads forward.

"See this metal bb? Now hear the sound it makes when thrown into the kettle." Pank! goes the bb [a 4·5 mm metal sphere sold in sports shops and typically used as ammunition in airguns] as it flies into the kettle and hits the metal pot lid suspended inside. "Let that sound represent the death of someone you know who died." The students grow quieter. Some look sad as they reflect on the death of a loved one.

"You think heroin's bad? It is. Here's how many Americans will die from a heroin overdose today." Pankkkkkk! Seven bbs pour on to the pot lid in the kettle. "That's 2480 each year."[1]

"You think cocaine's bad? It'll kill you too. "Here's how many Americans will die from a cocaine overdose today." Pankkkkkkkk! Nine bbs pour into the kettle. "3308 each year."[1] *The group is alert, listening to the bbs drop, guessing how many will be dropped for tobacco.*

"Tobacco." A measured pause rivets the students' attention forward. Pankkkkkkkkkkkkk ...! 1179 bbs pour slowly. Nervous laughter mounts as the bbs keep clattering in the kettle. "Holy s—!" says one boy. The bbs finally stop ... a longer measured pause lets it sink in. "Almost 1200 people every day.[2] *Almost all those people began using tobacco as children."*[1 2]

The students are now ready to listen to tobacco education, both during the assembly and in the classroom – for weeks to come. We believe that the demonstration has a strong impact because it requires use of multiple senses and targets resistance that stems from a fundamental human trait: difficulty in grasping the meaning of relative quantity.

Tobacco control researchers and advocates have for years discussed the importance of communicating the quantitative dangers of tobacco use,[3] but few have devised techniques that require people to use multiple senses. In addition, we know that in general young people are likely to respond favourably to messages that are easy to understand, concrete, practical, engaging, imaginative, and evoke a moderate degree of fear.[4 5] In the case of fear arousing messages, however, it is important to follow the messages with a discussion of strategies for reducing the threat. Our anecdotal experience suggests that the bb technique is effective with youth because it incorporates the characteristics of effective messages described above.

To perform this demonstration you will need 1200 metal bbs, a large kettle, a frying pan lid to be used as a sounding board, a plastic drinking cup to support the lid, and containers to hold pre-measured bbs (send a self addressed, stamped envelope to John Records for a more detailed description of the materials and procedures).

This demonstration, adapted from one used by Beyond War to illustrate the implications of the nuclear arms race, is but one of many techniques of creative epidemiology that tobacco advocates can use to engage